PSE-McBasic

Operation Manual

FCC Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class B computing device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which the user will be required to correct the interference at his own expense.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

The use of non-shielded I/O cables may not guarantee compliance with FCC RFI limits. This digital apparatus does not exceed the Class B limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe B prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.

Warranty

IMC Networks warrants to the original end-user purchaser that this product, EXCLUSIVE OF SOFTWARE, shall be free from defects in materials and workmanship under normal and proper use in accordance with IMC Networks' instructions and directions for a period of six (6) years after the original date of purchase. This warranty is subject to the limitations set forth below.

At its option, IMC Networks will repair or replace at no charge the product which proves to be defective within such warranty period. This limited warranty shall not apply if the IMC Networks product has been damaged by unreasonable use, accident, negligence, service or modification by anyone other than an authorized IMC Networks Service Technician or by any other causes unrelated to defective materials or workmanship. Any replaced or repaired products or parts carry a ninety (90) day warranty or the remainder of the initial warranty period, whichever is longer.

To receive in-warranty service, the defective product must be received at IMC Networks no later than the end of the warranty period. The product must be accompanied by proof of purchase, satisfactory to IMC Networks, denoting product serial number and purchase date, a written description of the defect and a Return Merchandise Authorization (RMA) number issued by IMC Networks. No products will be accepted by IMC Networks which do not have an RMA number. For an RMA number, contact IMC Networks at PHONE: (800) 624-1070 (in the U.S and Canada) or (949) 465-3000 or FAX: (949) 465-3020. The end-user shall return the defective product to IMC Networks, freight, customs and handling charges prepaid. End-user agrees to accept all liability for loss of or damages to the returned product during shipment. IMC Networks shall repair or replace the returned product, at its option, and return the repaired or new product to the end-user, freight prepaid, via method to be determined by IMC Networks. IMC Networks shall not be liable for any costs of procurement of substitute goods, loss of profits, or any incidental, consequential, and/or special damages of any kind resulting from a breach of any applicable express or implied warranty, breach of any obligation arising from breach of warranty, or otherwise with respect to the manufacture and sale of any IMC Networks product, whether or not IMC Networks has been advised of the possibility of such loss or damage.

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About the PSE-McBasic

The PSE-McBasic functions as a fiber-to-twisted pair media converter, as well as a 802.3af-compliant, Power Sourcing Equipment (PSE), delivering power to a Powered Device (PD) through the UTP data cable. Deploying a PSE-McBasic media converter supporting the Power over Ethernet standard is the solution for both extending the access point from the network core as well as powering the end-device at the access point.

The PSE-McBasic is fully compliant with IEEE 802.3u 100 Mbps Fast Ethernet and IEEE 802.3af Power over Ethernet standards, performing a single conversion between 100Base-TX twisted pair and 100Base-FX multi-mode or single-mode fiber. Single-strand fiber versions are also available. Each PSE-McBasic includes one RJ-45 connector for the twisted pair port and ST or SC connectors for the fiber port. The PSE-McBasic is 1U high and includes diagnostic LEDs as well as a universal (100/240 V AC) power supply.

About Power over Ethernet and PSE

Power over Ethernet technology allows the PSE-McBasic to function as Power Source Equipment (PSE) by distributing an electrical current across existing copper data cabling. If the connected unit requires power and is 802.3af compliant, the PSE detects it and supplies power. LEDs on the PSE-McBasic indicate the amount of power being supplied to the Powered Device (PD) as well as if the PSE-McBasic is over temperature or over current or has an open circuit. PSE functionality is enabled by default.

NOTE
Although the PSE-McBasic automatically detects Powered Devices (PDs), and only supplies power when connected to an 802.3af-compliant PD, set the PSE switch to OFF when connecting to a non-802.3af-compliant device.

Installing the PSE-McBasic

While the PSE-McBasic comes ready to install, all configuration changes should be made after installation. To install the PSE-McBasic first make sure that it is placed on a suitably flat surface. Attach the cables between the PSE-McBasic and each device that will be interconnected. Then, plug it into a reliable, filtered power source.

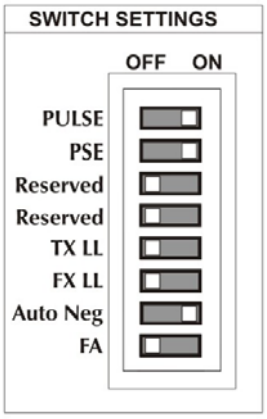
INSTALLATION TIP
Several versions of the PSE-McBasic support single-strand fiber operation. Since

single-strand fiber products use optics that transmit and receive on two different wavelengths, deploy single-strand fiber products in pairs, or connect two compatible IMC Networks single-strand fiber products. For example, connect a PSE-McBasic, TX/SSFX-SM1310-SC (which has 1310 xmt and 1550 rcv) to a product which has 1550 xmt and 1310 rcv, e.g. an iMcV-LIM, TX/SSFX-SM1550-SC. The two connected products must also have the same speed and distance capabilities (i.e. both are single-mode [20km] or both are single/PLUS [40km]).

Configuring the PSE-McBasic

The PSE-McBasic features an 8-position DIP Switches, set after installation. Access these through a cut-out in the bottom of the unit. After configuring the DIP Switches, power cycle the PSE-McBasic for the changes to take effect. Default settings for the following features are shown to the right.

- Pulse (Pulsing FiberAlert)
- PSE (Power Sourcing Equipment)
- TX LL (TX LinkLoss)
- FX LL (FX LinkLoss)
- Auto Negotiation
- FA (FiberAlert)



Some switches are reserved for future development.

LinkLoss and FiberAlert

PSE-McBasic includes the troubleshooting features FiberAlert, TXLL and FXLL that help locate *silent failures* on a network. Before attempting to install the module(s), understand how these features work and react to specific network configurations.

** WARNING **
Installing modules without understanding the effects of LinkLoss and FiberAlert can cause functioning units to appear flawed or even non functional.

Link Integrity

During normal operation, link integrity pulses are transmitted by all point-to-point Ethernet devices. When an IMC Networks media converter receives valid link pulses, it knows that the device to which it is connected is up and sending pulses, and that the copper or fiber cable coming from that device is intact. The appropriate "LNK" (link) LED is lit to indicate this.

The IMC Networks media converter also sends out link pulses from its copper and fiber transmitters, but normally has no way of knowing whether the cable to the other device is intact and the link pulses are reaching the other end. The combination of FiberAlert and LinkLoss allows this information to be obtained, even when physical access to a remote device (and its link integrity LED) is not available.

FX LinkLoss (FXLL)

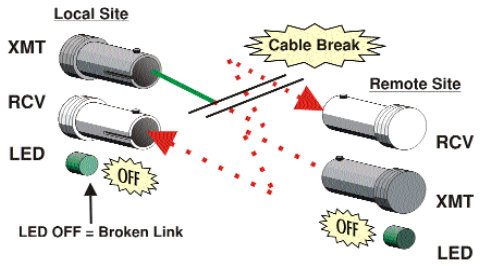
FX LinkLoss is a troubleshooting feature. When a fault occurs on the fiber segment of a conversation, FX LinkLoss detects the fault and passes this information to the twisted pair segment. If a media converter is not receiving a fiber link, FX LinkLoss disables the transmitter on the media converter's twisted pair port. This results in a loss of link on the device connected to the twisted pair port.

TX LinkLoss (TXLL)

TX LinkLoss is a troubleshooting feature. When a fault occurs on the twisted pair segment of a conversion, TX LinkLoss detects the fault and passes this information to the fiber segment. If a media converter is not receiving a twisted pair link, TX LinkLoss disables the transmitter on the media converter's fiber port. The result is in a loss of the link on the device connected to the fiber port.

FiberAlert (FA)

FiberAlert minimizes the problems associated with the loss of one strand of fiber. If a strand is unavailable, the IMC Networks device at the receiver end notes the loss of link. The device will then stop transmitting data and the link signal until a signal or link pulse is received. The result is that the link LED on BOTH sides of the fiber connection will go out indicating a fault somewhere in the fiber loop. Using FiberAlert, a local site administrator is notified of a fault and can quickly determine where a cable fault is located.



Product with *FiberAlert* enabled —Remote Site stops transmitting
Local Link LED is OFF indicating a break in the fiber loop

WARNING
Enable FiberAlert on one side of a media conversion only. Enabling it on both sides would keep both transmitters off indefinitely.

Using FiberAlert and LinkLoss

Modules ship from the factory with troubleshooting features disabled. Refer to the help file to enable/disable this feature.

Pulsing FiberAlert

Pulsing FiberAlert minimizes the problems associated with the loss of one strand of fiber. If a strand is unavailable, the IMC Networks device at the receiver end notes the loss of link. The device will stop transmitting data and start sending link pulses. Until a valid link is received, the fiber link LED will be OFF on the device on the receiver side of the fiber strand with the fault while the fiber Link LED on the other unit will blink. *Pulsing FiberAlert* notifies a local site administrator of a fault, allowing quick determination of where a cable fault resides.

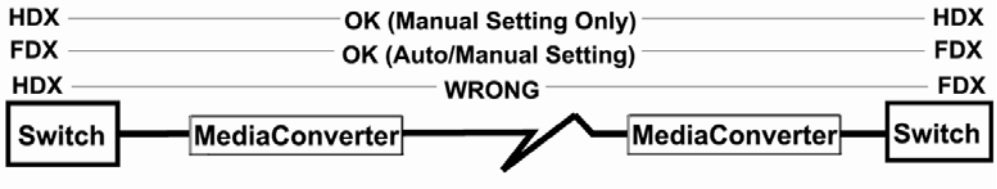
NOTE
Pulsing FiberAlert can be enabled on BOTH sides of a conversion.

Auto Negotiation on PSE-McBasic

PSE-McBasic modules include the feature Auto Negotiation. When Auto Negotiation is enabled, the module negotiates as a 100 Mbps full-duplex device. If the connected device can operate at 100 Mbps full-duplex, a link is established. Auto Negotiation (DIP Switch #1) is enabled by default.

If the twisted pair port on the other device does not have the ability to Auto Negotiate or if the 100 Mbps half-duplex connection is desired, then Auto Negotiation must be disabled. Half- and full-duplex settings must be set manually and match on does devices.

The following diagram shows a typical application and with three possible configurations.



End-to-End Connection	Switch	TX/FX
Half-Duplex	Configure HDX manually	Auto Negotiation is OFF
Full-Duplex	Configure FDX manually	Auto Negotiation is OFF
Full-Duplex	Auto Negotiation is ON	Auto Negotiation is ON

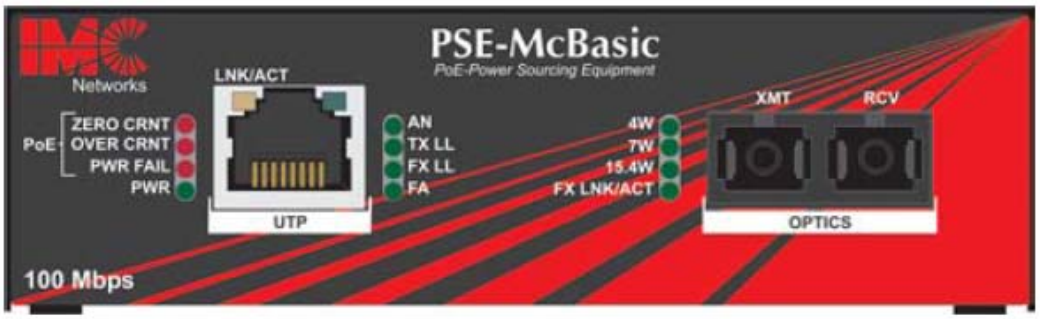
Configure Auto Negotiation on a PSE-McBasic by adjusting the DIP Switch setting (for unmanaged modules) or via the management software. Refer to the DIP Switch table for switch location and settings.

AutoCross Feature for Twisted Pair Connection

All twisted pair ports on the PSE-McBasic includes AutoCross, a feature that automatically selects between a crossover workstation and a straight-through connection depending on the connected device.

About the LED Indicators

The PSE-McBasic features multiple diagnostic LEDs. The diagram below shows the location of the LEDs.



The LED functions are:

LNK/ACT Glows red when no device is connected to the PSE-McBasic or when the device is NOT a valid PD. The LED is off when the PSE-McBasic detects a valid PD.

ZERO CRNT Glows red when no device is connected to the PSE-McBasic or when the device is NOT a valid PD. The LED is off when the PSE-McBasic detects a valid PD.

OVER CRNT Glows red when an over current condition lasts for more than 60 ms after power up and/or when an over temperature condition occurs.

PWR FAIL Glows red when an over current or internal fault is detected within the PSE-McBasic PoE circuit.

PWR Glows green when the PSE-McBasic is powered up.

AN Glows green when Auto Negotiation is enabled.

TX LL Glows green when TX LinkLoss is enabled.

FX LL Glows green when FX LinkLoss is enabled.

FA Glows green when FiberAlert is enabled and blinks when a FiberAlert situation occurs (i.e. the loss of one strand of fiber).

NOTE
FiberAlert will not function when single-strand fiber is connected.

4W Glows green when Powered Device consumes 3.84 watts to 4 watts of power (CLASS1 PD).

7W Glows green when Powered Device consumes 6.49 watts to 7 watts of power (CLASS2 PD).

15.4W Glows green when Powered Device consumes 12.95 watts to 15.4 watts of power (CLASS0 PD).

FX LNK/ACT Glows green when a link is established on the fiber port and blinks when activity is detected on the port.

Installation Troubleshooting

To test the PSE-McBasic during installation, first test the fiber and twisted pair connections with all troubleshooting features disabled, then enable these features, if desired, just before final installation. This will reduce the features' interference with testing.

When working with units whose features cannot be disabled, both twisted pair and fiber cables must be connected before the link LEDs will light.

To test a PSE-McBasic by itself, first verify that an appropriate fiber patch cable is being used. Then, follow these steps:

Step 1: Connect the PSE-McBasic to the twisted pair device with a twisted pair cable.

Step 2: Loop a single strand of fiber from the transmit port to the receive port of the PSE-McBasic.

Step 3: Verify that the twisted pair port and fiber port link.

Use the appropriate twisted pair cable, and have the crossover/pass-through switch set correctly.

If using a high powered device designed for long distance installations in a short distance installation, an optical attenuator may be needed to prevent data loss on a connection.

Visit www.imcnetworks.com or call IMC Networks for more information.

IMC Networks Technical Support

Tel: (949) 465-3000 or (800) 624-1070 (in the U.S. and Canada);

+32-16-550880 (Europe)

Fax: (949) 465-3020

E-Mail: techsupport@imcnetworks.com

Web: www.imcnetworks.com

Specifications

Environmental

Operating Temperature

-32° F to 122° F (-0° C to 50° C)

Storage Temperature

-4° F to 158° F (-20° C to 70° C)

Humidity

5 to 95% (non-condensing)

Input Specifications

100-240V AC, 50/60Hz, 1A

Dimensions

2.23″H x 4.75″W x 7.30″D (5.7 cm H x 12.1 cm W x 18.6 cm D)

Heat Generation

51 BTU/hr. maximum

Fan turns on if the internal temperature exceeds 113° F (45° C)

Fiber Optic Cleaning Guidelines

Fiber Optic transmitters and receivers are extremely susceptible to contamination by particles of dirt or dust, which can obstruct the optic path and cause performance degradation. Good system performance requires clean optics and connector ferrules.

1. Use fiber patch cords (or connectors, if you terminate your own fiber) only from a reputable supplier; low-quality components can cause many hard-to-diagnose problems in an installation.
2. Dust caps are installed at IMC Networks to ensure factory-clean optical devices. These protective caps should not be removed until the moment of connecting the fiber cable to the device. Should it be necessary to disconnect the fiber device, reinstall the protective dust caps.
3. Store spare caps in a dust-free environment such as a sealed plastic bag or box so that when reinstalled they do not introduce any contamination to the optics.
4. If you suspect that the optics have been contaminated, alternate between blasting with clean, dry, compressed air and flushing with methanol to remove particles of dirt.

Electrostatic Discharge Precautions

Electrostatic discharge (ESD) can cause damage to any product, add-in modules or stand alone units, containing electronic components. Always observe the following precautions when installing or handling these kinds of products

1. Do not remove unit from its protective packaging until ready to install.
2. Wear an ESD wrist grounding strap before handling any module or component. If the wrist strap is not available, maintain grounded contact with the system unit throughout any procedure requiring ESD protection.
3. Hold the units by the edges; do not touch the electronic components or gold connectors.
4. After removal, always place the boards on a grounded, static-free surface, ESD pad or in a proper ESD bag. Do not slide the modules or stand alone units over any surface.

WARNING! Integrated circuits and fiber optic components are extremely susceptible to electrostatic discharge damage. Do not handle these components directly unless you are a qualified service technician and use tools and techniques that conform to accepted industry practices.

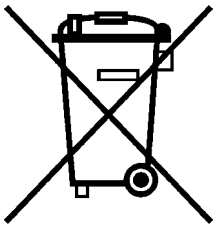
Safety Certifications

UL/CUL: Listed to Safety of Information Technology Equipment, including Electrical Business Equipment.

CE: The products described herein comply with the Council Directive on Electromagnetic Compatibility (2004/108/EC) and the Council Directive on Electrical Equipment Designed for use within Certain Voltage Limits (2006/95/EC). Certified to Safety of Information Technology Equipment, Including Electrical Business Equipment. For further details, contact IMC Networks.

Class 1 Laser product, Luokan 1 Laserlaite,
Laser Klasse 1, Appareil A'Laser de Classe 1

European Directive 2002/96/EC (WEEE) requires that any equipment that bears this symbol on product or packaging must not be disposed of with unsorted municipal waste. This symbol indicates that the equipment should be disposed of separately from regular household waste. It is the consumer's responsibility to dispose of this and all equipment so marked through designated collection facilities appointed by government or local authorities. Following these steps through proper disposal and recycling will help prevent potential negative consequences to the environment and human health. For more detailed information about proper disposal, please contact local authorities, waste disposal services, or the point of purchase for this equipment.



19772 Pauling • Foothill Ranch, CA 92610-2611 USA
TEL: (949) 465-3000 • FAX: (949) 465-3020
www.imcnetworks.com

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